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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/798,292	03/12/2004	William H. Velke		6440

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EXAMINER

COCKS, JOSIAH C

ART UNIT PAPER NUMBER

3749

DATE MAILED: 03/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/798,292

Applicant(s)

VELKE, WILLIAM H.

Examiner

Josiah Cocks

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 71-92 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 71-92 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Response to Amendment***

1. Receipt of applicant's amendment filed 12/5/2005 is acknowledged.

***Claim Objections***

2. Claim 81 is objected to because of the following informalities: "fkuid" should read "fluid". Appropriate correction is required.

***Claim Rejections - 35 USC § 112, first paragraph***

3. As noted in the prior Office actions, during prosecution applicant amended the claims to expressly recite that the type of fuel employed in the burner assembly is a fluid mixture of "suspended coal dust" or "coal dust slurry." These types of fuel were not explicitly recited in the application as originally filed. Accordingly, a 35 USC § 112, first paragraph rejection based on new matter was made to the claims reciting the specific type of fuel. In the response filed 12/5/2005, applicant has pointed out that the application as originally filed did include disclosure that the type of fuel may be a "conventional fluid hydrocarbon fuel" (see specification, p. 9). Further, in the response filed 12/5/2005, applicant has presented evidence in the form of art citations and dictionary definitions in support of the assertion that both applicant was aware and a person of ordinary skill in the art would have been aware that the recitation of "conventional fluid hydrocarbon fuel" includes "suspended coal dust" or a "coal dust slurry" (see pages 5-9 of the 12/5/2005 response).

As noted in MPEP 2163.07 (I), the “mere inclusion of dictionary or art definitions known at the time of filing an application would not be considered new matter.” Therefore, based on the evidence submitted by applicant, the recitations of “suspended coal dust” and “coal dust slurry” though not expressly stated in the application as originally filed were supported by the original description through the use of the phrase “conventional fluid hydrocarbon fuel.”

**Accordingly, the previous new matter rejection that was applied to the added use of these terms in the claims is withdrawn.**

#### ***Double Patenting***

4. In the response filed 12/5/2005, applicant has included new independent claims (i.e. claims 71 and 83) that include limitations that the combustion mechanism claimed is operating as furnace or process heater in order to obviate the prior double patenting rejections made. This new claims are considered to positively recite that the combustion mechanism is a furnace or process heater and are sufficient to overcome the prior double patenting rejections based on application 10/798,294.

Applicant includes additional arguments (see response, pp. 9-16) asserting that now cancelled claim 49 was distinct from claims of application 10/798,294. However, as was noted in the prior Office action mailed 9/29/2005, claims 49-55 and 58-70 were claiming an invention not patentably distinct from claims 65-70 and 72-84 of application 10/798,294. However, as noted above, applicant’s amendments to the claims (i.e. new claims 71-92) now render the claims free of this double patenting rejection.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 71-92 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,720,057 to Arenson ("Arenson") in view of U.S. Patent No. 5,888,060 to Velke ("Velke").

Arenson discloses in Figures 1-4 an invention similar to that described in applicant's claims 71-92. In particular, in Figure 3 Arenson shows a process and device where a first exchanger assembly (116) extends through a first heat transfer zone related to the combustion mechanism and a second heat exchanger assembly (126) extending through a second heat transfer zone of the combustion mechanism. The fuel supplied through conduit (120) is heated at exchanger (116), which is heated by exhaust gases from a combustion mechanism conveyed through line (114). Air is conveyed through conduit (128) to the second heat exchanger (126). Example 2 (beginning in column 12) shows that natural gas is heated in the same manner proposed by applicant in order to leave heat exchanger (116) at a temperature of 168 degrees F (see col. 12, line 49) and that air is cooled in the same manner proposed by applicant in order to leave heat exchanger (126) at a temperature of 40 degrees F (see col. 12, line 32). These specific examples fall within applicant's claimed temperature ranges. Further, the examiner considers that as the process described in Arenson is identical to that of applicant's invention, any change in the fuel mass to combustion air mass would also occur in the process of Arenson.

In regard to claims 77 and 90, in order for the combustion device (gas turbine engine 28 or 112) of Arenson to operate as a combustion device there is necessarily some means for converting the oxidation mixture of fuel and air into high temperature, high velocity combustion products (i.e. to produce the turbine exhaust gases, note at least col. 8, lines 38-39 which are then exhausted via conduit 124, see col. 12, lines 49-51). Further, as shown in Figure 1, the exhaust products are used to heat a first heat exchanger (32) and an additional heat exchanger (46), which is considered to be a related energy transfer system.

In regard to applicant's device claims (i.e. beginning with claims 83), the recitation of the temperatures to which the fuel is heated and the air cooled are simply statements of the intended optimum heating and cooling values of the heat exchangers that would be obtainable through routine experimentation to result in the desired heating and cooling levels for the respective feeds. It has been held that where the general conditions of a claim are disclosed in the prior art, it is not invention to discover the optimum or workable ranges by routine experimentation. See MPEP 2144.05(II)(A). In this case, even if Arenson were not considered to disclose points within the temperature ranges recited by applicant (which it does, as noted above), the examiner considers that the heat exchangers disclosed by Arenson would be capable of heating and cooling to the temperatures recited and these meet the structural limitations of the claim.

Arenson does not disclose an insulating or heat storage material forming part of the heat exchanger assemblies, one of the heat transfer zones being related to the combustion area of the combustion mechanism, and that the combustion mechanism operates as a furnace or process heater. Arenson does, however, clearly disclose that the preheated cryogenic fluid may be

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passed to a point of use for distribution wherein such point of use may be combustion mechanism in the form of turbine (28) (see Arenson, at least col. 6, lines 63-68).

Velke teaches a device for pre-heating fluid to decrease its density and thus increase efficiency that is considered analogous prior art to both applicant's invention and Arenson. In Velke, a heat storage material forms part of a heat exchanger assembly (see col. 4, lines 18-23) for the purpose of equalizing heat transfer from the heating zone to the heat exchanger during on/off cycles of a combustion appliance. Velke also teaches the use of insulating material (21) in the heat exchanger shown in Figure 4 for the purpose of protecting against external heat loss. Velke also teaches that the heat transfer zone is operated from a source other than the combustion or exhaust gas vent area of the combustion mechanism in the case that access to such heat source locations is difficult (see col. 4, lines 16-18). Velke further teaches the use of a heat transfer zone being related to the combustion area of the combustion mechanism for the purpose of increasing efficiency of the appliance (see the abstract). The fuel employed is natural gas, propane gas, or other conventional fluid hydrocarbon fuel (see col. 3, lines 64-65).

In regard to the recitation that the combustion mechanism operates as a furnace or process heater, the combustion device disclosed in Velke is a combustion appliance that may be a furnace or heating devices( i.e. a process heater) (see col. 4, lines 45-46 and col. 8, lines 45-51).

Therefore, in regard to claims 71-92, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of Arenson: to incorporate the heat storage material and insulating material as taught by Velke to equalize heat transfer from the heating zone to the heat exchanger during on/off cycles of the appliance or to

protect against external heat loss; to incorporate the heat transfer zone being operated from a source other than the combustion or exhaust gas vent area of the combustion mechanism as taught in Velke in the case that such heat source location is difficult to reach (see Velke, col. 4, lines 16-18); and to incorporate heat transfer zone being related to the combustion area of the combustion mechanism as taught by Velke for the purpose of increasing the efficiency of the appliance. Further, it would have been obvious to a person of ordinary skill in the art to substitute a process heater or furnace as taught in Velke for the gas engine of Arenson as these combustion devices are well known to produce an exhaust gas that may be used for heating a fuel feed which occurs in both Arenson and Velke. This substitution is based on the location and environment intended to receive the gas combustion appliance. For example, if the environment receiving the combustion device is a commercial roof top then a process or space heater would be selected as the type of combustion device (see Velke, col. 9, lines 31-41).

### ***Response to Arguments***

7. Applicant's arguments filed 12/5/2005 as to the prior art rejections have been fully considered but they are not persuasive.

### **Regarding Prior Art**

Applicant argues that the preamble of applicant's method claims, namely that the method is "for combustion efficiency improvement in a combustion mechanism" distinguishes applicant's invention over Arenson. However, the examiner notes a preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claims does not depend on the preamble for



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completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). In this case, all of applicant's recited steps of the method have been identified in the prior art.

Applicant also argues that applicant's claimed temperature ranges distinguish applicant's invention. However, as noted above, Arenson clearly discloses temperature of both the fuel and air within the ranges specified in applicant's claims. Applicant appears to acknowledge this in page 23 of the response noting that Arenson heats the cryogenic fuel used as a fuel to a temperature of 168 degrees Fahrenheit (which is the temperature disclosed in Arenson's EXAMPLE 2, beginning in col. 12) and applicant's process heats the fuel to between 100 and 900 degrees Fahrenheit. Further, applicant appears to assert that because applicant's fluid hydrocarbon fuel is initially at an ambient temperature of 37 degrees Fahrenheit this distinguishes applicant's invention. **However, the examiner notes that limitations as to the initial temperature of the fluid hydrocarbon fuel do not appear as limitations in applicant's claims.** Further, applicant's specification does not appear to disclose that the initial temperature of the fuel is restricted only to ambient of 37 degrees Fahrenheit. Accordingly, this argument by applicant cannot be considered to patentably define applicant's claims from the disclosure of Arenson.

Applicant also again argues that the Arenson reference and that of Velke do not claim the invention as recited in applicant's claims (e.g. see response, p. 23). However, the examiner again notes that an assertion that references do not **claim** the same invention as applicant is irrelevant. The relevant consideration is what these references **disclose or describe** to a person

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of ordinary skill in the art. What these references disclose or describe is that appearing in the patent as a whole and not merely what these references are claiming (note the statutory language identified above for 35 USC 102 and 103). As noted above, the examiner has identified both method steps and structure present in the prior art, upon which applicant's claims read.

Further, applicant again argues that the use of Velke as a teaching reference for applicant's previous rejection of dependent claims in the form of an obvious type rejection under 35 USC 103 is a miss. This argument again shows applicant to be unfamiliar with the Office practice of the statement of the grounds of rejection as was discussed in the prior Office action. However, as applicant has amended the claims in the response of 12/5/2005 to include positive recitation that the combustion mechanism is either a furnace or process heater, none of applicant's claims are rejected as being anticipated by the prior art under 35 USC 102. Instead, as noted above, all of applicant's claims have been rejected on the basis of an obvious type rejection under 35 USC 103 based on Arenson in view of Velke. Accordingly, the Office practice of referencing a rejection of an independent claim in rejecting a dependent claim that applicant takes issues with is now no longer necessary for the statement of the rejection of the claims.

Applicant also argues that applicant's invention is distinct from Arenson because applicant's invention is concerned with combustion of a fluid hydrocarbon fuel whereas Arenson uses a cryogenic fluid. However, as made clear in Arenson, (for example, see example 2, column 12) the cryogenic fluid of Arenson includes the use of a liquefied natural gas (i.e. a fluid fuel) that is heated by a heat exchanger (116) in the same manner proposed by applicant to an example temperature of 168 degrees Fahrenheit (see col. 12, line 49). Combustion air is also

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passed through a second heat exchanger (126) and undergoes cooling, in the same manner proposed by applicant, to an example temperature of 40 degrees Fahrenheit (see col. 12, line 32). Further, the preheated cryogenic fluid is then passed to the combustion mechanism (i.e. turbine 28) for combustion as a fuel (see at least col. 6, lines 63-68). Arenson is clearly concerned with a fluid hydrocarbon fuel and air that is acted on in the same manner proposed by applicant.

Accordingly, applicant's claims are not considered to read over the prior art.

**Regarding application's submission of the ETV Environmental Report**

Applicant again submits a copy of an ETV Environmental report purportedly as evidence of the level of ordinary skill in art. However, again this report is submitted merely in the form or arguments made by applicant and not in the form of a declaration or affidavit under 37 CFR 1.132. Objective evidence must be supported by an appropriate declaration or affidavit to be of probative value. See MPEP 716.01(I), (II), and (III).

Accordingly, this ETV report is not considered persuasive to overcome the rejections based on the prior art.

***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Josiah Cocks whose telephone number is (571) 272-4874. The examiner can normally be reached on weekdays from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ehud Gartenberg, can be reached at (571) 272-4828. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jcc  
March 8, 2006

  
JOSIAH COCKS  
PRIMARY EXAMINER  
ART UNIT 3749